Supplementary Table S1. Characteristic Tree and Woody Species Reported from the Forest–Agriculture Interface of the Study Region

Scientific name	Common/local description	Growth form	District or wider regional occurrence	Relevance to the study landscape
Pinus roxburghii Sarg.	Chir pine	Coniferous tree	Swat and Lower Dir	Forms subtropical pine stands, including relatively open and degraded woodland; contributes timber, fuelwood, resin, litter, and grazing-related forest use
Quercus oblongata D. Don	Himalayan oak	Evergreen broad-leaved tree	Hindu Kush mountain forests, including the wider Swat–Dir region	Important component of oak woodland; provides fuelwood, fodder, shade, and habitat
Quercus dilatata Lindl. ex Royle	Moru oak	Evergreen broad-leaved tree	Higher-elevation Hindu Kush forests	Characteristic of moist-temperate oak communities and mixed forest landscapes
Quercus baloot Griff.	Holly oak	Evergreen broad-leaved tree	Drier Hindu Kush woodland	Characteristic of dry oak forest and woodland used for fuelwood and livestock-related purposes
Olea ferruginea Royle	Wild olive	Evergreen tree	Buner and the wider lower-elevation study region	Common component of dry subtropical woodland and forest–agriculture mosaics
Acacia modesta Wall.	Phulai	Drought-tolerant tree	Buner and lower-elevation subtropical areas	Occurs in open dry woodland, scrub, grazing areas, and agricultural margins
Dodonaea viscosa (L.) Jacq.	Sanatha	Woody shrub	Swat, Lower Dir, Buner, and adjoining areas	Common in disturbed, open, fire-prone slopes and degraded woodland
Punica granatum L.	Wild pomegranate	Shrub or small tree	Reported in pine-associated vegetation in Swat and Lower Dir	Occurs in woodland margins, disturbed slopes, and mixed rural vegetation
Daphne mucronata Royle	Daphne shrub	Woody shrub	Reported in the wider Swat–Dir vegetation zone	Understory or woodland-margin species associated with montane vegetation
Melia azedarach L.	Persian lilac / Bakain	Tree	Settlements and agricultural	Frequently associated with cultivated landscapes,

Scientific name	Common/local description	Growth form	District or wider regional occurrence	Relevance to the study landscape
			margins in the wider region	homesteads, and forest–agriculture interfaces

Note: *This table provides a concise reference-based list of characteristic woody species reported from the study region and adjoining Hindu Kush forest zones. Pinus roxburghii has been documented in forest stands in both Swat and Lower Dir, commonly with woody associates such as Dodonaea viscosa, Punica granatum, and occasionally Olea ferruginea. Published research also identifies oak communities dominated by Quercus baloot, Q. dilatata, and Q. oblongata in the Hindu Kush ranges, while studies from Buner report Olea ferruginea and Acacia modesta among important woody species.*

Supplementary Figure S1. Representative Forest–Agriculture Interface Landscapes in the Study Districts

(a) Swat District: Representative forest–agriculture interface showing wooded mountain slopes, cultivated land, and nearby rural settlement. The image illustrates the spatial proximity of forest vegetation, agricultural land, and household livelihood activities.

(b) Lower Dir District: Representative open woodland and agricultural landscape showing mixed tree and shrub cover, cultivated plots, access paths, and areas used for livestock movement or seasonal grazing.

(c) Buner District: Representative dry subtropical woodland–scrub mosaic adjoining agricultural land. The relatively open vegetation structure illustrates why the term "forest" in this study includes woodland and scrub-forest rather than only dense closed-canopy stands.

(d) Wildfire-Affected Interface Site: Representative fire-affected forest–agriculture interface showing visible evidence of burning, such as scorched vegetation, charred stems, reduced ground cover, or post-fire regeneration adjacent to farmland or livelihood resources.

